

RFMARKS

The subject Office Action requests the addition of section headings in the specification. This amendment adds appropriate section headings. The drawings are objected to for the perception of not including a claim feature. It is respectfully submitted that the drawings are inclusive, for the reasons discussed below. The Office Action states that embodiments 2, 3, and 4 appear to disclose a reverse order of deposition. The amendment to the specification at page 11, Embodiment 2, confirms this appearance. However, the statement in the Office Action that layer 5 is deposited on substrate 1 is not accurate; note the description states at page 11, lines 8 and 9; "second electrode 5 ... was provided on a carrier layer..." (emphasis added) in combination with lines 16 and 17 that state: "A substrate 1 of glass was fastened on the entire assembly..." which conveys the opposite condition. In other words, embodiments 2, 3 and 4 construct the filter arrangement of the invention upside down with respect to Figure 1, wherein second electrode 5 is deposited on a carrier layer, not on substrate 1. The carrier layer and protective layer in Figure 1 are initially indicated by numeral 6. Only the carrier layer is removed, leaving the protective layer, so layer 6 should still be shown as representative of ~~substrate 1, carrier layer 6, protective layer 6, and second electrode 5~~ described at page 3, lines 16 – 20 differs chemically from protective layer 6, shown in Figure 1 and described at page 5, lines 16 – 19. A material indicated as acceptable for protective layer 6 is SiO₂, (see line 19). In the description of Embodiments 2, 3 and 4, the second electrode 5... is deposited on a carrier layer made up of Si with a passivating

layer of SiO₂. Subsequently, the Si carrier layer is removed, leaving the passivating layer of SiO₂, being equal to the SiO₂ protective layer described on page 5 and in Embodiment 1 (page 10, lines 33 and 34).

It is respectfully submitted on the basis of the remarks above that the objection to Figure 1 for not showing the feature that "the carrier layer is removed," as stated in method claim 8, is due to a misconstruction. The description of embodiment 2 relates to Figure 1, but progresses through the method steps from the top to the bottom of the drawing. The amendment above clarifies this deposition order. The second electrode 5 is provided on a carrier layer of Si with a passivating layer of SiO₂ (lines 8 – 9). After additional components are added, "the Si layer of the carrier layer was etched away" (lines 17 – 18). Therefore, the passivating layer of SiO₂ remains. Figure 1 correctly portrays the semiconductor device in the condition of having protective layer 6 in place, being the passivating layer of SiO₂. Protective layer 6 is described as being formed of SiO₂ (see page 5, lines 16 - 19). Thus, it is respectfully submitted that the claim limitation "the carrier layer is removed" is portrayed in Figure 1. Claim 8 is amended hereby to incorporate the formation of the passivating layer on the carrier layer, as described in the

The Office Action rejects claims 1, 2, 4, 7 and 9 – 12 as unpatentable under 35 USC §102(b) over Sasaki et al. (US Patent No. 5,519,890). Claims 9 – 12 are also objected to as merely adding specific applications for the invention, but not adding actual limitations. Claims 9 – 12 are cancelled hereby. Claims 3, 5 and 6 are stated to contain allowable subject matter, but are objected to as being dependent from a rejected base

claim.

Claim 1 has been amended to incorporate the specific limitations of claim 3 which was stated to be allowable. Thus claim 1 is believed to be allowable. Claims 2, 4 and 7, being dependent from allowable claim 1 are also allowable. Claim 3 is cancelled. Claims 5 and 6 have been amended to depend from claim 1, and are also believed to be allowable. A sheet with marked up versions of specification page 11 and amended claims 1, 5, 6 and 8 is attached hereto.

In view of the foregoing amendment and remarks, it is respectfully submitted that all claims pending are allowable. Therefore, reconsideration and allowance are respectfully requested.

Respectfully submitted,



Michael R. Philips
Reg. No. 34,407
Attorney for Applicant

Kaplan & Gilman, LLP
900 Route 9 North
Woodbridge, NJ 07095
732-634-7634

MARKED UP VERSION SHOWING CHANGES TO THE SPECIFICATION, PAGE 11, LINES 4 – 22:

Embodiment 2:

The configurations described in Embodiments 2, 3 and 4 are understood in relation to Figure 1 wherein the layers are sequenced from the top down, with second electrode 5 provided on carrier layer 6, made up of a base Si layer and a superimposed passivating layer of SiO₂. To manufacture a filter arrangement with a bandpass filter and a notch filter, first the second electrode 5 comprising a thin Ti adhesion layer and a Pt layer was provided on a carrier layer or Si with a passivating layer of SiO₂. A piezoelectric layer 4 of AlN was provided on this second electrode 5. Then a first electrode 3 comprising Pt was provided on the piezoelectric layer 4. The three layers were structured

such that nine resonator units and one capacitor with a dielectric of AlN and the electrodes 3, 5 as well as an inductance were created. The lower electrode 3 was connected to ground. A 30nm thick, dense SiO₂ layer, thereon a porous SiO₂ layer in the form of an aerogel as a reflection element 2, and on this reflection element 2 a 300 nm thick layer of SiO₂ were deposited on the first electrode 3 in the region where the

by means of acrylate glue. Then the Si layer of the carrier layer was etched away. Contact holes for contacting the first electrode 3 and the second electrode 5 were etched into the remaining SiO₂ layer. Subsequently, bump end contacts of Cr/Cu were grown in the contact holes.

MARKED UP VERSION SHOWING CHANGES TO CLAIMS 1, 5, 6 and 8:

1. (Amended) A filter arrangement which comprises a substrate (1) on which are provided a thin-film bandpass filter and a thin-film notch filter, which filters are coupled to one another.
5. (Amended) A filter arrangement as claimed in claim [3] 4, characterized in that the filter arrangement of resonators comprises bulk acoustic wave resonators, surface acoustic wave resonators, or ceramic electromagnetic resonators.
6. (Amended) A filter arrangement as claimed in claim [4] 5, characterized in that the bulk acoustic wave resonator comprises a resonator unit and a reflection element (2) which is arranged between the substrate (1) and the resonator unit.
- 8 (Amended) A method of manufacturing a filter arrangement, which comprises a substrate (1) and provided thereon a bandpass filter of bulk acoustic wave resonators and a notch filter, by which method
 - a. a second electrode (5), a piezoelectric layer (4), and a first electrode (3) are provided on a passivating layer formed on a carrier layer and are structured such that at least one resonator unit, a capacitor, and an inductance are created,
 - b. a reflection element (2) is deposited on those portions of the first electrode (3) belonging to the resonator unit, [and]
 - c. a substrate (1) is fastened on the entire assembly, and the carrier layer is removed.